

Serial No.: 10/723,536
Reply to Office communication of April 1, 2008

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Listing of the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1. - 3. (Cancelled)

Claim 4. (Currently amended) A sensor device comprising:

an optical storage medium; and

a sensor film comprising a polymer support in combination with an analyte-specific reagent applied to at least a portion of the optical storage medium, wherein the polymer support is selected from the group consisting of poly(anilines), poly(thiophenes), poly(acetylenes), poly(alkenes), poly(dienes), poly(acrylics), poly(methacrylics), poly(vinyl ethers), poly(vinyl thioethers), poly(vinyl alcohols), poly(vinyl ketones), poly(vinyl halides), poly(vinyl nitriles), poly(vinyl esters), poly(styrenes), poly(arylenes), poly(oxides), poly(carbonates), poly(esters), poly(anhydrides), poly(urethanes), poly(sulfonates), poly(siloxanes), poly(sulfides), poly(thioesters), poly(sulfones), poly(sulfonamides), poly(amides), poly(ureas), poly(phosphazenes), poly(silanes), poly(silazanes), poly(benzoxazoles), poly(oxadiazoles), poly(benzothiazinophenothiazines), poly(benzothiazoles), poly(pyrazinoquinoxalines), poly(pyromellitimides), poly(quinoxalines), poly(benzimidazoles), poly(oxindoles), poly(oxoisindolines), poly(dioxoisindolines), poly(triazines), poly(pyridazines), poly(piperazines), poly(pyridines), poly(piperidines), poly(triazoles), poly(pyrazoles), poly(pyrrolidines), poly(carboranes), poly(oxabicyclononanes), poly(dibenzofurans), poly(phthalides), poly(acetals), poly(anhydrides), and copolymers of monomeric constituents of the above;

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said polymer support comprising a hydrogel wherein the hydrogel is tied via radical cross-linking of hydrophilic polymers selected from the group consisting of poly(acrylic acids), poly(methacrylic acids), poly(hydroxyethylmethacrylates), poly(glyceryl methacrylates), poly(vinyl alcohols), poly(ethylene oxides), poly(acrylamides), poly(N-acrylamides), poly(N,N-dimethylaminopropyl-N'-acrylamides), poly(ethylene imines), sodium poly(acrylates), potassium poly(acrylates) polysaccharides, poly(vinyl pyrrolidones), cellulose derivatives, and copolymers of monomeric constituents of the above.

Claims 5-6. (Cancelled)

Claim 7. (Currently amended) The sensor device of claim [5] 4 wherein the hydrogel is a poly(hydroxyethylmethacrylate) hydrogel tied via chemical cross-linking with an agent selected from the group consisting of N,N'-methylenebisacrylamide, polyethylene glycol diacrylate, triethylene glycol diacrylate, tetraethylene glycol dimethacrylate, tripropylene glycol diacrylate, pentaerythritol tetraacrylate, di-trimethylolpropane tetraacrylate, dipentaerythritol pentaacrylate, trimethylolpropane triacrylate, pentaerythritol triacrylate, propoxylated glyceryl triacrylate, ethoxylated pentaerythritol tetraacrylate, ethoxylated trimethylolpropane triacrylate, hexanediol diacrylate, and hexanediol dimethacrylate.

Claim 8. (Currently amended) The sensor device of claim [5] 4 wherein the hydrogel is a cellulose derivative tied via chemical cross-linking with an agent selected from the group consisting of dialdehydes, diepoxides, and polybasic acids.

Claim 9. (Currently amended) The sensor device of claim [5] 4 wherein the hydrogel is a graft copolymer of poly(ethylene oxide) with polymers selected from the group consisting of poly(ethyleneglycol), poly(acrylic acid), poly(vinyl pyrrolidone), poly(vinyl acetate), poly(vinyl alcohol), N,N-dimethylaminoethyl methacrylate, poly(acrylamide-co-methyl methacrylate), poly(N-isopropylacrylamide), and poly(hydroxypropyl methacrylate-co-N,N-dimethylaminoethyl methacrylate).

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Claim 10. (Currently amended) The sensor device of claim [5] 4 wherein the hydrogel is a graft copolymer selected from the group consisting of poly(vinyl pyrrolidone)-co-polystyrene copolymers, polyurethanes, polyurethaneureas in combination with poly(ethylene oxide), polyurethaneureas in combination with poly(acrylonitrile)-co-poly(acrylic acid), poly(acrylonitrile) derivatives, poly(vinyl alcohol) derivatives, and poly(acrylic acid) derivatives.

Claim 11. (Previously presented) The sensor device of claim 4 wherein the polymer support comprises a polymer blend.

Claim 12. (Previously presented) The sensor device of claim 4 wherein the sensor film is selectively permeable to an analyte on the basis of size of the analyte.

Claim 13. (Previously presented) The sensor device of claim 4 wherein the sensor film is selectively permeable to an analyte on the basis of phase of the analyte.

Claim 14. (Previously presented) The sensor device of claim 4 wherein the sensor film is selectively permeable to an analyte on the basis of solubility of the analyte.

Claim 15. (Previously presented) The sensor device of claim 4 wherein the sensor film is selectively permeable to an analyte on the basis of ion charge of the analyte.

Claim 16. (Previously presented) The sensor device of claim 4 wherein the analyte-specific reagent is selected from the group consisting of organic dyes, inorganic dyes, nanocrystals, nanoparticles, quantum dots, organic fluorophores, inorganic fluorophores, IR absorbing dyes, near infrared absorbing materials, UV absorbing dyes, photochromic dyes, and thermochromic dyes.

Claim 17. (Previously presented) The sensor device of claim 4 wherein the analyte-specific reagent is selected from the group consisting of xanthene dyes, acridine dyes, azo dyes, porphyrin dyes, phthalocyanine dyes, cyanine dyes, merocyanine dyes,

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styryl dyes, oxonol dyes, triarylmethane dyes, methylene blue, phenol blue, bromothymol blue and bromocresol green.

Claim 18. (Previously presented) The sensor device of claim 4 wherein the analyte-specific reagent is a light absorbing reagent selected from the group consisting of carbon black, photochromic quinones, photochromic viologens, spirooxazines, and spiropyrans.

Claim 19. (Previously presented) The sensor device of claim 4 wherein the analyte-specific reagent is responsive to light at about 200 nm to about 1100 nm.

Claim 20. (Previously presented) The sensor device of claim 4 wherein the analyte-specific reagent is responsive to light at about 300 nm to about 1000 nm.

Claim 21. (Previously presented) The sensor device of claim 4 wherein the analyte-specific reagent is responsive to light at about 350 nm to about 950 nm.

Claim 22. (Previously presented) The sensor device of claim 4 further comprising an adhesive to adhere the sensor film to the optical storage medium.

Claim 23. (Original) The sensor device of claim 22 wherein the adhesive comprises a pressure sensitive adhesive.

Claim 24. (Previously presented) The sensor device of claim 4 further comprising a solvent-resistant overlayer over the sensor film.

Claim 25. (Original) The sensor device of claim 24 wherein the solvent-resistant overlayer is selected from the group consisting of random copolymers of tetrafluoroethylene and perfluoro-2,2-dimethyl-1,3-dioxole, perfluorosulfonate ionomers, and hydrogels.

Claims 26 – 63. (cancelled)

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